

Set Name Query
side by side

Hit Count Set Name
result set

DB=USPT; PLUR=YES; OP=ADJ

<u>L6</u>	L5 and (availab\$ and resourc\$).ab.	1	<u>L6</u>
<u>L5</u>	L4 and (schedul\$ and download\$).ab.	29	<u>L5</u>
<u>L4</u>	(network\$ or internet\$).ab.	51107	<u>L4</u>
<u>L3</u>	L1 and schedul\$	30	<u>L3</u>
<u>L2</u>	L1 and (download\$ with schedul\$)	1	<u>L2</u>
<u>L1</u>	(download\$ and (load adj2 balanc\$) and (determin\$ with resource\$ with availab\$))	45	<u>L1</u>

END OF SEARCH HISTORY

Set Name Query

side by side

Hit Count Set Name

result set

DB=USPT; PLUR=YES; OP=ADJ

<u>L8</u>	(download\$ and (load adj2 balance\$) and (determin\$ with resource\$ with availab\$))	9	<u>L8</u>
<u>L7</u>	(download\$ same (load adj2 balance\$) same (determin\$ with resource\$ with availab\$))	0	<u>L7</u>
<u>L6</u>	L1 and (availab\$ with resource\$)	0	<u>L6</u>
<u>L5</u>	L1 and (available with resource\$)	0	<u>L5</u>
<u>L4</u>	L1 and updat\$	1	<u>L4</u>
<u>L3</u>	L1 and download\$	1	<u>L3</u>
<u>L2</u>	L1 and applet\$	0	<u>L2</u>
<u>L1</u>	5768528.pn.	1	<u>L1</u>

END OF SEARCH HISTORY

Schedule download
availability of resumes.

**WEST**

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Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5768528 A

L4: Entry 1 of 1

File: USPT

Jun 16, 1998

DOCUMENT-IDENTIFIER: US 5768528 A

TITLE: Client-server system for delivery of online information

US Patent No. (1):
5768528Brief Summary Text (2):

This invention relates to a client-server system for delivering online information, and more specifically to a news delivery system configured to send updated information at scheduled intervals.

Detailed Description Text (4):

A plurality of publishers 24 communicate with server system 20 via Internet 22. Each publisher 24 transmits a plurality of data files to server system 20 for use by subscribers of on-line delivery system 10 as will be explained in more detail hereinafter. These data files may include any sort of information that each publisher desires to disseminate electronically in addition to its hardcopy versions. Each publisher also sends additional information to server system 20 relating to the flow of the information to the subscribers, such as types of information that need be sent, schedules for such transmittals, the number of updates per date and so forth.

Detailed Description Text (6):

In accordance with one embodiment of the invention, publishers 24 may be news publishers who publish various news publications. Each publisher 24 who desires to make available its publications for on-line transmission, generates all corresponding data files that contain information corresponding to such publications. These data files may include files containing information representing clip audio/video images and photographs relating to news articles and other files corresponding to the text of such articles. Some publishers may also desire to make available other updated information throughout the day. For example, financial newspapers may prepare few editions of their electronic paper as certain information is updated throughout the day.

Detailed Description Text (15):

The information contained in schedule of events file 60 is advantageously updated by the corresponding publisher. In accordance with an alternative embodiment of the invention, this information is also subject to alteration by the subscriber. Thus, for example, the publisher controls the times the subscriber's computer 26 is prompted to communicate with server system 20 and to download the set of files intended for the subscriber's use.

Detailed Description Text (21):

FIG. 5 illustrates the operation of accessing a server system 20 and downloading data files intended for a subscriber software system. At step 120 subscriber software system 40 prompts communication manager 46 to access all files currently stored in subscriber's directory relating to a particular publisher. At step 122, communications manager 46 calculates a 32 bit cyclic redundancy code (CRC) and filesize of each file stored in the subscriber's directory relating to a particular

publisher. The operation for measuring CRC of each file is well-known. Generally, the CRC code for each file is a number that uniquely identifies a file based on its contents. The probability that two files have the same CRC is extremely low and is substantially zero for purposes of the present invention. By employing the CRC codes in addition to file sizes, server system 20 can advantageously track different versions of the same filename. Thus, each publisher can easily update its files without the need to change the filenames. Each version of a file is then identified, among other things, by its unique CRC code identifier.

Detailed Description Text (23):

Server system 20 checks the files that are currently stored in subscriber software system 40 for a particular publisher. It then determines the files that are intended for the subscriber, based on instructions received from the publisher. Server system 20 measures the CRC code and the size for each file that is intended for the subscriber and then compresses these files. Server system 20 then transmits the compressed files to subscriber software 40 along with the filename of each file and its corresponding CRC code and file size. Server system 20 compresses the files in accordance with any commercially available compression schemes, such as the compression protocol known as "ZIP." At step 128, communications manager 46 receives the updated files in compressed format. Thereafter at step 130, communications manager 46 decompresses each file and calculates the CRC code for each decompressed file.

Detailed Description Text (38):

Server system 20 then goes to step 178 to monitor requests received from various subscribers. As mentioned before, each subscriber may have more than one subscription to various publishers. Furthermore, server system 20 preferably provides information corresponding to a plurality of different publishers. For example, server system 20 in accordance with one embodiment of the invention stores all the necessary files corresponding to each publisher for further transmission to each subscriber that is subscribed to that publisher. Thus, server system 20 monitors all requests related to any of the publishers that are being served by the server system. At step 180, server system 20 receives a request for updated data files corresponding to a given publisher. Server system 20, first identifies the subscriber who has transmitted the request, based on the unique identifier assigned to the subscriber. At step 184, server system 20 transmits corresponding updated schedule of events file if necessary. At step 186, server system 20 receives a temporary file containing a list of existing files in subscriber's subdirectory along with file sizes, file names, and CRC codes, as explained in reference with step 126 of FIG. 5.

Detailed Description Text (40):

As mentioned before, the process of updating the subscriber's files appears transparent to the subscriber. The subscriber is only notified when all the files have been successfully transferred to the subscriber's computer.

Detailed Description Text (46):

Thus, during operation, each subscriber views on the monitor a ticker bar 284 that displays scrolling messages corresponding to a publisher. Simultaneously, the subscriber also views the publisher's name or its logo. A channel selector allows the subscriber to flip through various messages provided by different publishers whose data files are accessible to the subscriber. In accordance with one embodiment of the invention, viewer manager 48 allows the subscriber to move a cursor or a pointer along the screen 280, for example by a desktop mouse. The subscriber may then click on the up or down arrow of channel selector 286 to change the publisher. Furthermore, by double clicking on publisher's name or logo 282, viewer manager 48 retrieves all the files relating to the selected publisher for viewing by the subscriber. These files may form the electronic version of a publication as discussed above. In accordance with another embodiment of the invention, the position and size of ticker 284, publisher's name or logo 282 and channel selector 286 may be varied by the subscriber by clicking and dragging the mouse according to well-known protocols. The viewing arrangement describer herein allows for a remarkably convenient way to interact with subscriber software 40. Furthermore, subscribers are notified in an efficient manner of updated messages.

Full	Title	CLS.1	REF.1	SEQ.1	ATT.1

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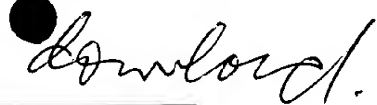
Term	Documents
UPDAT\$	0
UPDAT	18
UPDATA	135
UPDATABILITY	16
UPDATABLE	1002
UPDATABLEBY	1
UPDATABLE-TYPE	1
"UPDATABLE.SU"	1
"UPDATABLE.SUB"	1
"UPDATABLE.*"	5
"UPDATABLE.*-PUBLIC"	1
(L1 AND UPDAT\$).USPT.	1

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**WEST**

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Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5768528 A

L3: Entry 1 of 1

File: USPT

Jun 16, 1998

DOCUMENT-IDENTIFIER: US 5768528 A

TITLE: Client-server system for delivery of online information

Abstract Text (1):

A method for operating a server system adapted to provide information files to a plurality of subscribers over communications network, such as Internet. A plurality of publishers store their publishing material such as newspapers, magazines or software files in a database server. The database server maintains a schedule of events file adapted to contain information relating to predetermined downloading schedules to the subscribers of the database server. The schedule of events file or the relevant portions of it are then transmitted to individual subscribers so that requests for information can be launched from the subscribers terminals at a predetermined time in accordance with the schedule of event file. The server then transmits to each requesting subscriber a set of predetermined data files as authorized by a corresponding one of the publishers, including each file's name, size and identification code in response to said information request from each one of the subscribers. In accordance with another aspect of the invention, the database server keeps a track of information file transmittals and makes sure that a file has been successfully downloaded. If not, the database server keeps a track of the portion of the files that have been successfully transmitted and attempts to retransmit the portion that has not been received successfully, several times until the entire file is successfully received.

US Patent No. (1):5768528Brief Summary Text (4):

Within the past few years, the number of individuals who access the Internet has grown rapidly. Many individuals utilize the Internet to access news or to purchase software. In response, many news publishers desire to provide the electronic version of their publications to such Internet customers. A drawback encountered by the publishers and providers of other on-line services is the slow data speed over telephone lines. Downloading a news publication with many photographs and advertising images might take few minutes with currently available technology. Many individuals find such a delay to receive a news publication unacceptable. Likewise, many individuals who desire to download software through Internet, have found the delay associated with such downloading unacceptable.

Brief Summary Text (5):

Furthermore, the currently available online systems do not provide means to guarantee the complete transmission and reception of data files. For example, in the event of any interruptions or communication errors, the entire downloading process needs to be repeated at the direction of the user. Such delays have discouraged many users as well as many service providers from utilizing Internet as a means for delivering and receiving electronic publications and/or software.

Brief Summary Text (9):

Briefly in accordance with one aspect of the invention, a method for operating a server system adapted to provide on-line publications to a plurality of subscribers,

comprises the steps of: storing in a database server publication data files received from a plurality of publishers; maintaining a schedule of events file adapted to contain information relating to predetermined downloading schedules to the subscribers desiring a corresponding publication; receiving from each subscriber an information request in accordance with the schedule of events file and a list of existing files in the subscriber's database including the file names, file sizes and corresponding file identification code; transmitting to the subscriber a set of predetermined data files as authorized by a corresponding one of the publishers, including each file's name, size and identification code in response to the information request from each one of the subscribers.

Brief Summary Text (12):

In accordance with another aspect of the invention, a method for downloading data files from a server system to a subscriber's computer system, wherein the data files originated by a plurality of publishers, the method comprises the steps of: maintaining a schedule of events file containing a time schedule for downloading the data files; maintaining a log file for tracking the success and failure of the events; transmitting an information request to the server system when the event is launched at a scheduled time; receiving a group of files corresponding to a publisher from the server system, and their corresponding filesizes and CRC codes in response to the information request; and tracking the log file to determine whether the last event scheduled was completed successfully.

Detailed Description Text (5):

Finally, a plurality of subscribers employ personal computers 26 to communicate with server system 20 via Internet 22. Each computer 26 includes a subscriber software system 40 (FIG. 2), also known as agent, that is configured to communicate with server system 20 at a predetermined schedule, and is further configured to download appropriate information from server system 20 in accordance with one embodiment of the invention, although the invention is not limited in scope in that respect. Subscriber software system 40 preferably functions in the background, so that the user of computer 26 is allowed to use the computer for other purposes, while the software system is completing its job.

Detailed Description Text (8):

As mentioned before, each publisher provides its electronic publications to server system 20 in the form of data files. To this end, publisher 24 transmits the data files that it intends to target to the subscribers to server system 20 for storage in database 16. At predetermined intervals, each subscriber software system operates to connect a corresponding computer 26 to server system 20 to download the intended information into its system. Once the information has been successfully downloaded, the subscriber software system informs the subscriber that the information is available for viewing. As mentioned, the operation of the subscriber software system including the connection to server system 20 and downloading the appropriate data files from server system 20 is typically handled by computer 26 in the background. Thus a subscriber can use computer 26 for other purposes, while the information is being acquired and downloaded from server system 20. Because the system acquires and downloads the information at a predetermined schedule, and notifies the subscriber after the information is available, the subscriber does not experience the waiting time associated with downloading information via an Internet communication session. Thus, the downloading process becomes transparent to the subscriber, leading to increasing demand for subscription.

Detailed Description Text (13):

FIG. 3 is a block diagram illustrating some of the files that are controlled by scheduler 44. In accordance with one embodiment of the invention, scheduler 44 causes information to be read from and written to a schedule of events file 60. The schedule of events file contains a list of events that are intended to be performed by subscriber software system 40. For example the categories of information that are stored in one embodiment of schedule of events file in accordance with the present invention are the type of tasks to be performed, days of the week that the tasks must be performed, months within which the tasks must be performed, days of the month that the tasks must be performed and hours and minutes that the tasks must be performed. However, the invention is not limited in scope to the scheduled times identified herein. Furthermore, the type of tasks identified herein may vary

according to a particular application. For example, in a publishing context, such tasks may preferably comprise communicating with a server system and downloading appropriate files as explained hereinafter.

Detailed Description Text (15):

The information contained in schedule of events file 60 is advantageously updated by the corresponding publisher. In accordance with an alternative embodiment of the invention, this information is also subject to alteration by the subscriber. Thus, for example, the publisher controls the times the subscriber's computer 26 is prompted to communicate with server system 20 and to download the set of files intended for the subscriber's use.

Detailed Description Text (17):

As a result of this time synchronization feature employed by the scheduler system in accordance with the present invention, it is possible for all subscribers across various time zones to contact server system 20 at substantially the same time to download time-sensitive information at about the same time.

Detailed Description Text (20):

One of the events that is launched by scheduler 44 is a communication connection to server system 20 in order to download data files that are provided by each publisher and intended for subscribers that are subscribed to services of each of the publishers. In order to assure the integrity of the files transferred from server system 20 to each subscriber's computer 26, a communications scheme in accordance with one embodiment of the present invention is employed as described hereinafter.

Detailed Description Text (21):

FIG. 5 illustrates the operation of accessing a server system 20 and downloading data files intended for a subscriber software system. At step 120 subscriber software system 40 prompts communication manager 46 to access all files currently stored in subscriber's directory relating to a particular publisher. At step 122, communications manager 46 calculates a 32 bit cyclic redundancy code (CRC) and filesize of each file stored in the subscriber's directory relating to a particular publisher. The operation for measuring CRC of each file is well-known. Generally, the CRC code for each file is a number that uniquely identifies a file based on its contents. The probability that two files have the same CRC is extremely low and is substantially zero for purposes of the present invention. By employing the CRC codes in addition to file sizes, server system 20 can advantageously track different versions of the same filename. Thus, each publisher can easily update its files without the need to change the filenames. Each version of a file is then identified, among other things, by its unique CRC code identifier.

Detailed Description Text (47):

Thus, the present invention provides for a convenient way to receive on-line information relating to a plurality of publishers or software vendors without the disadvantages associated with downloading data through the Internet.

CLAIMS:

1. A method for operating a server system adapted to provide on-line publications via a computer communications network to a plurality of subscribers, comprising the steps of:

storing in a database server publication data files received from a plurality of publishers;

maintaining a schedule of events file adapted to contain information relating to predetermined downloading schedules to said subscribers via said communications network desiring a corresponding publication;

transmitting to said plurality of subscribers schedule information corresponding to said schedule of events file so as to provide the times which said subscribers are scheduled to access said server system;

receiving from each subscriber at said scheduled times an information request in

accordance with said schedule of events file and a list of existing files in said subscriber's database including said file names, file sizes and corresponding file identification code;

transmitting to said subscriber a set of predetermined data files as authorized by a corresponding one of said publishers, including each file's name, size and identification code in response to said information request from each one of said subscribers.

14. A method for downloading data files from a server system to a subscriber's computer system, said data files originated by a plurality of publishers, said method comprising the steps of:

maintaining a schedule of events file containing a time schedule for downloading said data files;

maintaining a log file for tracking the success and failure of said events;

transmitting an information request to said server system when said event is launched at a scheduled time;

receiving a group of files corresponding to a publisher from said server system, and their corresponding file sizes and CRC codes in response to said information request;

tracking said log file to determine whether the last event scheduled was completed successfully; and

launching said last event when said log file indicates that said last event scheduled was not completed successfully.

Full Title || CLS.1 REF.1 SEQ.1 ATT.1

Generate Collection

Print

Term	Documents
DOWNLOAD\$	0
DOWNLOAD	13358
DOWNLOADABILITY	1
DOWNLOADABLC	1
DOWNLOADABLE	1353
DOWNLOADABLES	7
DOWNLOADABLESACCESS	1
DOWNLOADABLE-ACCESSIBLE	2
DOWNLOADABLE-IN-REAL-TIME	1
"DOWNLOADABLE.SUB"	1
DOWNLOADADDRESS	1
(L1 AND DOWNLOAD\$).USPT.	1

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Search Results - Record(s) 1 through 1 of 1 returned.

☐ 1. Document ID: US 5768528 A

L2: Entry 1 of 1

File: USPT

Jun 16, 1998

copy

DOCUMENT-IDENTIFIER: US 5768528 A

TITLE: Client-server system for delivery of online information

US Patent No. (1):
5768528Detailed Description Text (36):

col 9
160
-64

At step 174, server system 20 queries the subscriber with demographic information. At step 176, server system 20 stores subscriber's demographics in database 16 (FIG. 1). The demographic information may advantageously include the subscriber's personal information, job information and company information. This information is preferably available to a corresponding publisher for further market analysis. Server system 20 also queries the subscriber whether the computer that is being used by the subscriber is part of a local network that employs a proxy server. If so, server system 20 requests the proxy address from the subscriber. The operation of proxy servers are well-known, and is not described herein in detail.

Full Title || CLS.1 REF.1 SEQ.1 ATT.1

Generate Collection

Print

Term	Documents
PROXY	3642
PROXIES	810
PROXYS	8
SERVERS	0
SERVER	39615
SERVERA	10
SERVERABILITY	1
SERVERABLE	11
SERVERABLY	2
SERVERACCEPT	1
SERVERACCESS	1
(L1 AND (PROXY ADJ1 SERVERS)).USPT.	1

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WEST*J. Applied***Freeform Search****Database:**

US Patents Full-Text Database
 US Pre-Grant Publication Full-Text Database
 JPO Abstracts Database
 EPO Abstracts Database
 Derwent World Patents Index
 IBM Technical Disclosure Bulletins

Term:

L4 and ((schedul\$ with download\$ request\$) and
 (resource\$ with availab\$))

Display: **Documents in Display Format:** **Starting with Number**
Generate: ☐ Hit List ☒ Hit Count ☐ Side by Side ☐ Image

Search

Clear

Help

Logout

Interrupt

Main Menu

Show S Numbers

Edit S Numbers

Preferences

Cases

Search History
DATE: Sunday, November 02, 2003 [Printable Copy](#) [Create Case](#)
Set Name Query
 side by side

Hit Count Set Name
 result set

DB=USPT; PLUR=YES; OP=ADJ

<u>L10</u>	L4 and ((schedul\$ with download\$ request\$) and (resource\$ with availab\$))	2	<u>L10</u>
<u>L9</u>	L4 and ((schedul\$ with download\$ request\$) same (resource\$ with availab\$))	0	<u>L9</u>
<u>L8</u>	L4 and (schedul\$ with download\$ request\$).ab.	1	<u>L8</u>
<u>L7</u>	L5 and (availab\$ with resourc\$ with schedul\$)	1	<u>L7</u>
<u>L6</u>	L5 and (availab\$ and resourc\$).ab.	1	<u>L6</u>
<u>L5</u>	L4 and (schedul\$ and download\$).ab.	29	<u>L5</u>
<u>L4</u>	(network\$ or internet\$).ab.	51107	<u>L4</u>
<u>L3</u>	L1 and schedul\$	30	<u>L3</u>
<u>L2</u>	L1 and (download\$ with schedul\$)	1	<u>L2</u>
<u>L1</u>	(download\$ and (load adj2 balanc\$) and (determin\$ with resource\$ with availab\$))	45	<u>L1</u>

WEST

Generate Collection

L10: Entry 2 of 2

File: USPT

Mar 2, 1999

DOCUMENT-IDENTIFIER: US 5878228 A

TITLE: Data transfer server with time slots scheduling base on transfer rate and predetermined data

Abstract Text (1):

This invention relates to a method and protocol to enable a simple, reliable and highly scalable data transfer facility in a digital data network. A connectionless, unacknowledged data transfer protocol minimizes resource utilization at a data server and is combined with source rate control to reduce congestion in the intervening network. The data transfer server implementing the protocol, operates by defining a circular ordering of individual scheduling timeslots having zero or more download records. The server selects in sequence, at a predetermined rate, the individual scheduling timeslots, and services, responsive to the selected timeslot having at least one download record, each record therein according to parameters in that record. Servicing includes (i) sending, to the destination address, a download message which includes a block of data extracted from the identified data, based on the remaining data information; (ii) updating the remaining data information to reflect the block of data that was sent; and (iii) rescheduling, based on the transfer rate and the predetermined rate, the download record into an appropriate one of the scheduling timeslots.

Detailed Description Text (13):

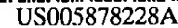
Referring to FIG. 3, a GetFilesize message is illustrated. This message requests that the server reply with the size of the requested file, so that the client can ensure sufficient resources are available and allocated to receive it. Fields forming part of the GetFilesize message include:

Detailed Description Text (59):

Even though the server rate controls individual downloads, since multiple download records 36 can be processed in each iteration, it may still be presenting extremely bursty traffic to the underlying protocol stack and to the attached network, which may cause a local failure. If this is detectable to the server 12, for example by a return code from a message sending primitive, then the server 12 should defer further work in that scheduling timeslot 34 and reschedule all remaining download requests 36 until the next available timeslot 34.

Detailed Description Text (60):

The preferred implementation of the PDU Scheduler 28 should have a tick granularity for the timer 30 (corresponding to timeslot granularity for the PDU scheduling queue 32) that is considerably smaller than the minimum inter-PDU delay. As long as download requests arrive relatively randomly, distribution of outstanding requests within the scheduler timeslots 34 will be improved, and the chance of server overloads will be reduced.



[11] **Patent Number:** **5,878,228**

[45] **Date of Patent:** Mar. 2, 1999

- | | | | |
|-----------|---------|-----------------------|---------|
| 5,634,042 | 5/1997 | Kashiwagi et al. | 395/556 |
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Primary Examiner—Dung C. Dinh
Assistant Examiner—Chuong Ho
Attorney, Agent, or Firm—John A. Granchelli; Jean-Pierre Fortin

[57] **ABSTRACT**

This invention relates to a method and protocol to enable a simple, reliable and highly scalable data transfer facility in a digital data network. A connectionless, unacknowledged data transfer protocol minimizes resource utilization at a data server and is combined with source rate control to reduce congestion in the intervening network. The data transfer server implementing the protocol, operates by defining a circular ordering of individual scheduling timeslots having zero or more download records. The server selects in sequence, at a predetermined rate, the individual scheduling timeslots, and services, responsive to the selected timeslot having at least one download record, each record therein according to parameters in that record. Servicing includes (i) sending, to the destination address, a download message which includes a block of data extracted from the identified data, based on the remaining data information; (ii) updating the remaining data information to reflect the block of data that was sent; and (iii) rescheduling, based on the transfer rate and the predetermined rate, the download record into an appropriate one of the scheduling timeslots.

18 Claims, 9 Drawing Sheets

U.S. PATENT DOCUMENTS

[58] **Field of Search** 370/392, 232,

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